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10/727,425

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EXAMINER

ZHE, MENG YAO

ART UNIT

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2195

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary

Application No.

10/727,425

Applicant(s)

LIMAYE ET AL.

Examiner

MengYao Zhe

Art Unit

2109

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/4/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-27 are presented for examination.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claim 27 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

- i) Claim 27 is rejected under 35 U.S.C. 101 because the claimed invention are directed to system claim, but appearing to be comprised of software alone without claiming associated computer hardware required for execution (i.e. claim 7 claims for a task scheduler, which is a software entity.). The following link on the World Wide Web is for the United States Patent And Trademark Office (USPTO) policy on 35 U.S.C. §101.

http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 1-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The following claim languages are unclear and indefinite:

i) Claim 1, line 2, it is uncertain as to what a cluster is <i.e. a cluster could be a cluster of computers distributed over a network or it could be a cluster of CPUs all contained in a single multiprocessor computer.>.

Line 3, it is unclear as to what a node is <i.e. is it a computer? Or is it a CPU?>

Line 4, it is not certain as to what is meant by "subsequent of the cluster being partitioned..." <i.e. was the cluster originally not partitioned and had multiple applications running on the entire cluster? If so, what is the cluster before being partitioned a cluster of, since it is not partitioned? A cluster means a cluster of things or partitions. If it has not been partitioned, how can it be a cluster?>

ii) Claim 2, it is unclear as to what the relationship is between "first logical cluster" of line 2 and "first one of the sub-clusters" of line 4 <i.e. what does the first logical cluster encompass? does it include the first sub-cluster?>

lines 5-6, it is unclear as to what is meant by 'automatically wins ownership...' <i.e. why would the sub-cluster need to win the ownership of the logical cluster if the logical cluster is already part of the sub-cluster?>

iii) Claim 4, it is unclear what is the order of "executing..." in line 2 and "cluster being partitioned in line 4" <i.e. which step happens first? were the applications already executing on the cluster before it was even being partitioned?>

iv) Claim 5, it is unclear what the relationships are among "first application" in line 3, "sub-clusters" in line 2 and "a logical cluster" in line 2 <i.e. was the application already executing on the logical cluster prior to the cluster being partitioned? what is the relationship between the cluster and the logical partition? does the cluster include the logical partition? does the sub-cluster include the logical cluster?>

it is uncertain as to how the first application is executed on a logical cluster according to lines 2-3 while in claim 1, line 5, the first application is also being executed on the sub-cluster as well <i.e. how many environments can an application execute in?>

v) Claim 7, line 2, it is unclear why communication need to be reestablished between the sub-cluster <i.e. was the communication

between the sub-clusters lost before? if so, when? before the cluster was partitioned?>

vi) Claim 8, line 2, it is unclear as to what the relationship is between "more than one of the sub-clusters" and "a plurality of sub-clusters" in line 4 of claim 1 <i.e. are they the same? if so, the names should be consistent.>

vii) Claim 9, it is unclear how selecting is done "based on application-specific information..." <i.e. how does the information determine how the selection is done?>

viii) Claim 12, line 2, it is unclear why the cluster needs to detect that it has been partitioned <i.e. was it originally not partitioned? and then a user issued a command to partition it? Please see claim 1 rejection for details.>

line 5-7: it is unclear how to determine if a node can execute an application "based on application-specific information..." <i.e. how does the information determine how the decision is made?>

Similarly, claims 18, 23, and 27 have the same deficiencies as claim 12.

ix) Claim 13, it is unclear what the relationships are among "first one of the application" in line 3, "sub-clusters" in line 2 of claim 12, and "a logical

cluster" in line 2 <i.e. was the application already executing on the logical cluster prior to the cluster being partitioned? what is the relationship between the cluster and the logical partition? does the cluster include the logical partition? does the sub-cluster include the logical cluster?>

Similarly, claims 19 and 24 have the same deficiencies as claim 13.

x) Claim 14, it is unclear what the relationships are among " the node" in line 2, the "logical cluster" in line 4, and "the one of the sub-clusters" are <i.e. is the node part of the logical cluster or the sub-cluster?>

It is unclear what the relationship is between "the one of the sub clusters" and "one of the plurality of sub-clusters" <i.e. are they the same thing? If so, consistent names should be used.>.

xi) Claim 15, it is unclear how "if a second node in another one of the sub-clusters is part of a logical cluster..." in lines 3-5 determines "whether the node can execute the first one of the applications" in lines 1-2 <i.e. how does the one influence the decision?>.

Similarly, claim 25 have the same deficiencies.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 4, 5, 8, are rejected under 35 U.S.C. 102(e) as being anticipated by Eilert et al., Patent No. 6,587,938 (hereafter Eilert).

8. As per claim 1, Eilert teaches the invention as claimed including a method comprising:

executing a first application on a cluster (Column 4, lines 12-15: CPC corresponds to cluster), the cluster comprising a plurality of nodes (Fig 1B, unit 106: CP corresponds to nodes); and

subsequent to the cluster being partitioned into a plurality of sub-clusters (Column 6, lines 10-29: partition groups corresponds to clusters),

a first one of the sub-clusters executing the first application, wherein a second one of the sub-clusters is capable of executing a second application (Column 4, lines 50-56: programs corresponds to applications).

9. As per claim 4, Eilert teaches executing a plurality of applications on the cluster, the plurality of applications comprising the first application and the second application; and subsequent to the cluster being partitioned into the plurality of sub-clusters, the second one of the sub-clusters executing the second application (Column 4, lines 50-56; Column 6, lines 10-28: programs, which corresponds to applications, execute in logical partitions. If a program is executing in logical partition A, and if logical partition A is part of a logical partition group A, it is inherent that the program will also be executing in the logical partition group A).

10. As per claim 5, Eilert teaches the first one of the sub-clusters winning ownership of a logical cluster on which the first application is executed, wherein prior to the first one of the sub-clusters winning ownership of the logical cluster, more than one of the sub-clusters each included a node that participated in the logical cluster (Column 8, lines 50-67: in the case of additive resource, a CPU could have belonged to another logical group before getting reassigned to another logical group).

11. As per claim 8, Eilert teaches a sub-cluster of the more than one of the sub-clusters continuing to execute a third application of the applications subsequent to the

first one of the sub-clusters winning ownership of the logical cluster on which the first application is executed (Column 4, lines 50-56).

12. Claims 12-13, 18-19, 23-24, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Winchell, Pub No. 2003/0187927 (hereafter Winchell).

13. As per claims 12, 18, 23, and 27, Winchell teaches
detecting that a cluster has been partitioned into a plurality of sub-clusters (Paragraph 180: group of cluster nodes corresponds to sub-clusters), the cluster executing one or more applications, and one of the plurality of sub-clusters comprising a node (Paragraphs 9 and 180: it is inherent that the system disclosed by Winchell can detect that it is partitioned since it has a Membership system that keeps track what node belongs to what cluster.);

determining whether the node can execute a first one of the applications based on application-specific information associated with the first one of the applications (Paragraph 159: since an application keep track of its primary and standby node in case of the failure of the primary node, a node will know if it is allowed to execute that program under either normal conditions or under conditions of failure.).

14. As per claims 13, 19, and 24, Winchell teaches wherein the application-specific information identifies which nodes are part of a logical cluster on which the first one of the application is executing (Paragraphs 9, 52, 54, 159, 160, 166: logical cluster

corresponds to partition. Membership information keeps track of what nodes belong to what partition and status array S keeps track of the nodes an application execute on.).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 2, 3, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eilert et al., Patent No. 6,587,938 (hereafter Eilert).

16. As per claim 2, Eilert does not specifically state wherein the first application executes on a first logical cluster, and if each of the nodes participating in the first logical cluster is included in the first one of the sub-clusters subsequent to the cluster being partitioned, the first one of the sub-clusters automatically wins ownership of the first logical cluster.

17. However, it would have been obvious to one having ordinary skill in the art at the time of applicant's invention to see, based on Eilert's teaching of claim 1, that if a logical cluster (logical partition), containing its nodes (CPs), is already part of its sub-cluster (partition group), then that sub-cluster would naturally own the logical cluster.

18. As per claim 3, Eilert teaches wherein subsequent to the first one of the sub-clusters winning ownership of the first logical cluster, one of the nodes is not allowed to join the first logical cluster unless the one of the nodes is comprised in the first one of the sub-clusters (Column 6, lines 35-55; Column 7, lines 10-25; Column 9, lines 3-18: the total amount of resources, including CPU resource, assigned to a logical partition is constant. Therefore, a CPU may not join the logical partition unless it has been properly assigned to that logical partition.).

19. As per claim 9, Eilert does not specifically teach selecting the first one of the sub-clusters to win ownership of the logical cluster based on application-specific information associated with the first application.

However, it would have been obvious to one having ordinary skill in the art at the time of applicant's invention to see, based on Eilert's teaching of claim 1, that if a logical cluster (logical partition), containing its nodes (CPs), is already part of its sub-cluster (partition group), then that sub-cluster would naturally own the logical cluster.

Moreover, if an application (Column 4, lines 50-56: program corresponds to application) is already running in the logical cluster, it is obvious that the logical partition that it is being executed on knows that this program is running on itself.

20. As per claim 10, Eilert does not specifically teach wherein the application-specific information comprises information identifying each node configured to participate in the logical cluster on which the first application is executed.

However, it would have been obvious to one having ordinary skill in the art at the time of applicant's invention to have information keeping track of the applications that each node and logical cluster runs.

21. Claims 6, 7, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eilert et al., Patent No. 6,587,938 (hereafter Eilert) in view of Winchell, Pub No. 2003/0187927 (hereafter Winchell).

22. As per claim 6, Eilert does not teach at least one of the nodes comprised in the logical cluster storing configured logical cluster membership information, which identifies which of the nodes were originally included in the logical cluster by an administrator of the cluster, and storing current logical cluster membership information, which identifies which of the nodes are included in the logical cluster subsequent to the first one of the sub-clusters winning ownership of the logical cluster.

23. However, Winchell teaches at least one of the nodes comprised in the logical cluster storing configured logical cluster membership information, which identifies which of the nodes were originally included in the logical cluster by an administrator of the cluster, and storing current logical cluster membership information, which identifies which of the nodes are included in the logical cluster subsequent to the first one of the sub-clusters winning ownership of the logical cluster for the purpose of keeping track of the groupings of nodes (Abstract and paragraph 9).

24. It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to modify the teachings of Eilert with at least one of the nodes comprised in the logical cluster storing configured logical cluster membership information, which identifies which of the nodes were originally included in the logical cluster by an administrator of the cluster, and storing current logical cluster membership information, which identifies which of the nodes are included in the logical cluster subsequent to the first one of the sub-clusters winning ownership of the logical cluster, as taught by Winchell, because it allows the system to keep track of the groupings of nodes.

25. As per claim 7, Winchell teaches in response to communication being reestablished between the sub-clusters, one or more nodes automatically rejoining the logical cluster, wherein the one or more nodes are identified in the configured logical cluster membership information but not identified in the current logical cluster membership information (paragraphs 67-69).

26. As per claim 11, Winchell teaches wherein the application-specific information comprises information indicating that the first application is dependent on a third application of the applications; and the first one of the sub-clusters comprises a node that is configured to execute the third application (Paragraph 159: each instance of application A may be considered an application itself.).

27. Claims 14-17, 20-22, and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winchell, Pub No. 2003/0187927 (hereafter Winchell).

28. As per claim 14, the group of cluster nodes corresponds to sub-clusters, and each group of cluster nodes is designated for special work items. It would have been obvious to one having ordinary skill in the art to see that any node in that group of cluster nodes can execute the application since all of the nodes working on the application is already in the group of cluster nodes. (Paragraph 180-181)

29. As per claims 15 and 25, Winchell teaches wherein the determining whether the node can execute the first one of the applications comprises:

accessing a coordinator resource if a second node in another one of the sub-clusters is part of a logical cluster on which the first one of the applications is executing (Paragraphs 9 and 165: membership along with status array corresponds to coordinator resource).

30. As per claims 16 and 21, Winchell teaches wherein the application-specific information identifies whether the first application is dependent on a second application, the application-specific information indicates whether the node is configured to execute the second application (Paragraph 159: each instance of application A may be considered an application itself.).

31. As per claims 17, 22 and 26, Winchell does not specifically teach determining whether the node can execute a second application of the applications independently of determining whether the node can execute the first application.

32. However, Winchell teaches a status array that associates work to a node, the association is done for each work. It is obvious to one having ordinary skill in the art at the time of applicant's invention to see that that the determination of if a node can execute a first work is not dependent on determining if the node can execute a second work since the status array only displays the one node associated with one particular work (Paragraphs 164-165).

33. As per claim 20, Winchell teaches wherein the program instructions are executable to: access a coordinator resource if a second node in another one of the sub-clusters is part of the logical cluster (Paragraph 165).

Conclusion

34. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MengYao Zhe whose telephone number is 571-272-6946. The examiner can normally be reached on Monday Through Friday, 7:30 - 5:00 EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached at 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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